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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kohei Nagayama

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EXAMINER

BRAY, STEPHEN A

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,989	<b>Applicant(s)</b> NAGAYAMA, KOHEI	
	<b>Examiner</b> STEPHEN BRAY	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16 and 19-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16 and 19-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### ***DETAILED ACTION***

In an amendment dated, 3/18/2011, the Applicant amended claims 16 and 19; cancelled claims 1-15 and 17-18; and added claims 20-26. Currently claims 16, 19-26 are pending.

### ***Allowable Subject Matter***

1. The indicated allowability of claim 16 is withdrawn in view of the newly made amendment to Claim 16. The previous Claim 1 recited “...*a resistance layer electrically connecting the first electrode and the second electrode and continuously arranged between a surface of a liquid layer side of the first electrode and a surface of a liquid layer side of the second electrode.*” and Claim 16 recited “...*wherein the resistance layer comprises an indium-tin-oxide film.*” The newly amended Claim 16 recites “...*a resistance layer electrically connecting the first electrode and the second electrode and comprising an indium-tin oxide film.*”, which no longer claims that the resistance layer is continuously arranged between the liquid layer containing the electrophoretic particles and each of the first electrode and the second electrode. The newly amended Claim 16 also fails to include the limitation “...*means for applying a voltage between the first electrode and the second electrode.*”, which was also recited in the previous Claim 1. Therefore the subject matter contained in the newly amended Claim 16 is broader than the subject matter contained in the previous version of Claim 16 which was indicated as allowable in the Non-Final office action mailed on 12/27/2010. Therefore the allowability of Claim 16 has been withdrawn.

***Response to Arguments***

2. Applicant's arguments with respect to claims 16, 19-26 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 16, 19-21, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (WO 2004/044647) in view of Ikeda et al (US 6,741,385).

**Regarding claim 16**, *Endo* discloses an electrophoretic display device (Figure 1 of *Endo* discloses an electrophoretic display.), comprising:

a substrate (Figure 1 and Page 10, lines 6-18 of *Endo* disclose having a first substrate 1.),

a light-transmissive sealing plate (Figure 1 and Page 19, lines 6-14 of *Endo* disclose the second substrate 2 is made of a transparent material and thus acts as a light-transmissive plate.);

a partition wall disposed between a surface of the substrate and the sealing plate (Figure 1 and Page 9, line 24 through Page 10, line 14 of *Endo* discloses having a partition wall 7 disposed between the first substrate 1 and the sealing plate 2.),

a liquid layer, disposed in a container including the substrate and the partition wall, comprising electrophoretic particles and a dispersion medium (Figure 1 and Page 9, line 10 through Page 10, line 18 of *Endo* discloses having electrophoretic particles 6 disposed in an insulating liquid 5 located within a container formed by the substrate 1, the sealing plate 2, and the partition walls 7.),

a first electrode formed at a position apart from the partition wall on the substrate (Figure 1 of *Endo* discloses having a first electrode 3 disposed in the center of the display cell.),

a second electrode formed along the partition wall (Page 10, lines 7-10 of *Endo* discloses that the second electrode 4 can be formed on the surface of partition wall 7.),  
and

*Endo* fails to teach a resistance layer electrically connecting the first electrode and the second electrode and comprising an indium-tin-oxide film.

*Ikeda et al* discloses a resistance layer electrically connecting the first electrode and the second electrode and comprising an indium-tin-oxide film (Figure 6 of *Ikeda et al* discloses having a layer consisting of an electrode 5d and an insulating material 9 disposed between the first electrode 5a and the second electrode 5b. Column 7, lines 26-30 of *Ikeda et al* also discloses that the any conductive material capable of patterning can be used to make the electrodes, and the Examiner takes official notice that it is well known that indium-tin-oxide, or ITO, is a conductive material which can be patterned. The term “**comprising**” which is used by the Applicant is an open-ended

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term and does not exclude additional components or steps. Therefore the combination of the electrode 5d and the insulating material 9 can be understood to be the resistance layer electrically connecting the first electrode 5a and the second electrode 5b, where the resistance layer comprises an ITO film.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the electrophoretic device taught by *Endo* with the teachings of *Ikeda et al* in order to form a display device with higher display contrast.

**Regarding claim 19**, *Endo* as modified above discloses a device according to claim 1, wherein the first electrode is formed of a metal film (Page 24, lines 19-26 of *Endo* discloses that the first electrode 3 can be formed of an aluminum film.).

**Regarding claim 20**, *Endo* as modified above discloses an electrophoretic display device according to claim 16, wherein the resistance layer is continuously arranged between a surface of a liquid layer side of the first electrode and a surface of a liquid layer side of the second electrode (Figures 4-6 of *Ikeda et al* discloses having a layer consisting of electrodes 5c and 5d and an insulating material 11 disposed between the first electrode 5a and the second electrode 5b. Column 7, lines 26-30 of *Ikeda et al* also discloses that the any conductive material capable of patterning can be used to make the electrodes, and the Examiner takes official notice that it is well known that indium-tin-oxide, or ITO, is a conductive material which can be patterned. Therefore the combination of the electrode 5c and the insulating material 11 can be understood to be

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the resistance layer being continuously arranged between the surface of a liquid layer 2 and the first electrode 5a and the second electrode 5b, where the resistance layer comprises an ITO film.).

**Regarding claim 21,** *Endo* as modified above discloses an electrophoretic display device according to claim 16, wherein the resistance layer is formed to cover the partition wall (Page 10, lines 7-10 and Page 13, lines 23-27 of *Endo* discloses forming a surface insulating layer over the second electrode 4 formed on the partition wall 7.).

**Regarding claim 23,** *Endo* as modified above discloses an electrophoretic display device according to claim 16, further comprising an insulating layer disposed between the liquid layer and the first electrode and having a contact hole, wherein the first electrode and the second electrode are electrically connected through the contact hole (Figure 5 of *Ikeda et al* discloses having an insulating layer 11 disposed between the liquid layer 2 and the first electrode 5a, where electrodes 5c and 5d act in combination to electrically connect electrodes 5a and 5b.).

**Regarding claim 25,** *Endo* as modified above discloses an electrophoretic display device according to claim 23, wherein the insulating layer is a coloring layer (Column 6, lines 27-33 of *Ikeda et al* discloses that the insulating layer can be used as a coloring layer.).

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5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (WO 2004/044647) and Ikeda et al (US 6,741,385) as applied to claim 16 above, and further in view of Lindsay et al (US 6,861,497) and Swidler (US 5,411,833).

**Regarding claim 22,** *Endo* as modified above discloses a device according to claim 16 (Column 6, lines and Column 7, lines 38-40 of *Ikeda et al* disclose that the insulating layer can be formed out of amorphous fluoro-resin, high-transparent polyimide, acrylic resin while the insulating liquid 2 can be made of isoparaffin, silicone oil, xylene, or toluene.).

*Lindsay et al* discloses the resistance value of the resistance layer (Column 2, lines 43-54 and the abstract of *Lindsay et al* disclose having a transparent polyimide material which has an electrical resistivity which ranges from  $10^6$  to  $10^{16}$  Ohm-centimeters in value.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the electrophoretic device taught by *Endo* with the teachings of *Lindsay et al* in order to form a display device in which the insulating layer has a high resistance to solvents and is easily processed into thin films.

*Swidler* discloses the resistance value of the liquid layer (Column 11, lines 44-68 of *Swidler* discloses having a silicon oil carrier liquid which has a volume resistivity of  $10^9$  to  $10^{10}$  Ohm-centimeters in value.).



Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the electrophoretic device taught by *Endo* with the teachings of *Swidler* in order to form a display device in which the liquid layer will not interfere with the electric field generated by the electrodes.

Therefore *Endo* in view of *Ikeda et al* and *Lindsay et al* and *Swidler* discloses the resistance layer has a resistance value smaller than a resistance value of the liquid layer ((Column 6, lines and Column 7, lines 38-40 of *Ikeda et al* disclose that the insulating layer can be formed out of a high-transparent polyimide material and the insulating liquid 2 can be made of silicone oil. Column 2, lines 43-54 and the abstract of *Lindsay et al* discloses a transparent polyimide material having an electrical resistivity which ranges from  $10^6$  to  $10^{16}$  Ohm-centimeters. Column 11, lines 44-68 of *Swidler* discloses having a silicon oil carrier liquid which has a volume resistivity of  $10^9$  to  $10^{10}$  Ohm-centimeters. Therefore the resistance value of the resistance layer is smaller than the resistance value of the liquid layer.).

6. Claims 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Endo* (WO 2004/044647) and *Ikeda et al* (US 6,741,385) as applied to claim 16 above, and further in view of *Comiskey et al* (US 6,724,519).

**Regarding claim 24**, *Endo* as modified above discloses an electrophoretic display device according to claim 23.

*Endo* as modified above fails to teach a light reflection layer disposed between the first electrode and the substrate.

*Comiskey et al* discloses a light reflection layer disposed between the first electrode and the substrate (Figure 3C-3D of *Comiskey et al* discloses having a light reflection layer 60 disposed below the electrode 40.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the electrophoretic device taught by *Endo* with the teachings of *Comiskey et al* in order to form a display device which can be produced at a lower cost and used in a variety of environments.

**Regarding claim 26**, *Endo* as modified above discloses an electrophoretic display device according to claim 24, wherein the light reflection layer is formed of an uneven portion (Column 16, lines 6-20 of *Comiskey et al* discloses that the light reflection layer 60 can be embossed, which means that the reflection layer is no longer smooth (i.e. the reflection layer is uneven).).

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN BRAY whose telephone number is (571)270-7124. The examiner can normally be reached on Monday - Friday, 9:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AMR AWAD can be reached on (571)272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M Nguyen/  
Acting SPE of Art Unit 2629

/STEPHEN A BRAY/  
Examiner, Art Unit 2629

4 June 2011